

METHOD AND APPARATUS FOR
INCREASING THE TEMPERATURE OF A FUEL CELL

Abstract

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5 A method and apparatus increase the
temperature of a fuel cell via reactant starvation
at one or both electrodes. Reactant starvation at
an electrode results in an increased overvoltage
at the electrode and hence increased internal heat
generation under load. Further, starvation
techniques may be used to prevent poisoning of
electrode catalysts, a potential problem that is
aggravated at lower temperatures. Starvation
10 conditions can be prolonged or intermittent and
can be obtained, for example, by suitably reducing
the supply rate of a reactant or by operating the
fuel cell at sufficiently high current density so
as to consume reactant faster than it is supplied.
15 The method can allow for some generation of useful
power by the fuel cell during start-up. The
method is particularly suitable for starting up a
solid polymer electrolyte fuel cell from
temperatures below 0°C.